



PennState



**Penn State Food Safety Short Course @ NULES; Kyiv, Ukraine
Agenda for Program
June 4-July 6, 2018**

Week 1: Introduction to Food Science

June 4-8, 2018

Day 1

9:30 am	Welcome
10 am	Introductions
10:30 am	Pre-test Assessments
11 am	What is Food Science?
12:00 PM	Lunch
1:00 PM	Intro to Food Product Development (FPD)
2:00 PM	FPD Assignment
3:00 PM	Break
3:15 PM	FPD Group Exercise - Competitive Market Analysis
5:00 PM	Adjourn

Day 2

9:00 AM	Food Spoilage & Pathogens
10:00 AM	Factors That Affect Microbial Growth
11:00 AM	Food Safety, Separate, Cook, Chill
11:30 AM	Hurdle Technology
12 pm	Lunch
1 pm	Breakout Session-Hurdle technology
2 pm	Report on Breakout Session
2:30 PM	Break
3 pm	FPD Group Exercise - Discussion
5 pm	Adjourn

Day 3

Tour food processing facility-beer brewing

Day 4

9am	Introduction to Food Chemistry
10am	Functional Properties of Carbohydrates
10:15 am	Functional Properties of Lipids
11 am	Functional Properties of Proteins
Noon	Lunch
1-4 pm	Lab: Jerky Making Lab: Cheese Making
4:00 PM	FPD Group Exercise - Competitive Analysis Group Presentation
5 pm	Adjourn

Day 5

9 am	Introduction to Food Processing
9:30 AM	Thermal Processing, Canning, Pasteurization
10am	Refrigeration, Freezing & Drying
11:00 AM	Microwaving
Noon	Lunch
1:00 PM	Introduction to Sensory Science
2-3:30 pm	Sensory Lab: Jerky and Dairy
3:30 PM	Introduction to Food Science Case Study
4:30 PM	Introduction to Food Science Quiz
5:00 PM	Adjourn

Week 2: Food Microbiology and Sanitation

June 11-15, 2018

Day 1

9:00 AM	Introduction to Food Microbiology
10:00 AM	Spoilage and Indicator Microorganisms
11:00 AM	Methods for Sampling Food Products
Noon	Methods for Bacterial Dilution and Enumeration
1:00 PM	Lunch
2:00 PM	Parasites and Viruses
3:00 PM	Lab: Aseptic Techniques/Sample Preparation Standard Plate Count/Pour Plates/Petrifilm Staining and Microscopy
5:00 PM	Adjourn

Day 2

9:00 AM	DNA Based Methods for Pathogen Detection
10:00 AM	Introduction to Mold & Mycotoxins
10:30 AM	<i>Listeria monocytogenes</i> and <i>Staphylococcus aureus</i>
11:15 AM	<i>Salmonella</i> and <i>Campylobacter</i> spp.
Noon	Lunch
1:00 PM	Enterohemorrhagic <i>Escherichia coli</i>
2:00 PM	Other Pathogens
2:30 PM	Introduction to Immunological Methods
3-4 PM	Lab: Immunological Methods
4 PM	Setting Up a Microbiology Laboratory
4:30 PM	FPD Group Exercise - NPD assignment & Market Analysis
5:00 PM	Adjourn

Week 2: Food Microbiology and Sanitation

June 11-15, 2018

Day 3

9:00 AM	Food Microbiology Case Study
10:00 AM	Food Microbiology Quiz
11:00 AM	Introduction to Sanitation
11:30 AM	Biofilms
12 noon	Lunch
1:00 PM	Cleaning & Sanitizing
1:45 PM	Personal Hygiene & Employee Practices With Activities
3:45 PM	Allergen Control
4:00 PM	Pest Control
4:30 PM	Adjourn

Day 4

9:00 AM	Plant and Equipment Sanitary Design
10:30 AM	Sanitary Technology and Problem Solving
11:00 AM	Monitoring and Verification
Noon	Lunch
1:00-3:00 PM	Labs: Cleaning and Sanitizing Food Contact Surfaces Rapid Methods for Allergen Detection
3:15 PM	Sanitation Case Study
4:30 PM	Sanitation Quiz
5:00 PM	Adjourn

Day 5

9:00 AM- 5 PM	Tour Food Processing Facility-Ice Cream Processing
5:00 PM	Adjourn

Week 3: Thermal Processing and Acidified Foods

June 18-22, 2018

Day 1

9:00 AM	Introduction to Thermal Processing
10:00 AM	Microbiology of Thermally Processed Foods
11:00 AM	Principles of Acidified Foods
Noon	Lunch
1:00 PM	Principles of Thermal Processing
2:00 PM	Equipment, Instruments and Operation for Thermal Processing
3:00 PM	FPD Group Exercise-Sharing of Product Concept
4:30 PM	Adjourn

Day 2

9:00 AM	Still Steam Retorts, Still Retort Processing with Overpressure, Agitating and Hydrostatic Retorts
10:00 AM	Principles of Plant Sanitation
11:00 AM	Food Packaging - Closures for Double Seam Metal & Plastic Containers
Noon	Lunch
1:00-4:00 PM	Hands-on Labs: Salsa Making Jam/Jelly Making
4:00 PM	Work on FPD Group Exercise
5:00 PM	Adjourn

Day 3

Tour Food Processing Facility-Poultry Processing

Day 4

9:00 AM	Food Packaging - Closure for Glass Containers
10:00 AM	Food Container Handling
11:00 AM	Records and Record Keeping
Noon	Lunch
1:00 PM	Flexible Packaging
2:00 PM	Taste Testing of Salsa and Jam From Previous Lab

3:00 PM	FPD Group Exercise - Package Development
5:00 PM	Adjourn

Day 5

9:00 AM	Aseptic processing
10:00 AM	Case Study on Thermal Processing
11:30 AM	Thermal Processing Quiz
Noon	Lunch
1:00 PM	FPD Group Exercise - Work on Presentations
5:00 PM	Adjourn

Week 4: HACCP and Food Defense

June 25-29, 2018

HACCP

Day 1

9:00 AM	Introduction to HACCP
9:45 AM	Prerequisites to HACCP
10:45 AM	Sanitation and SSOPs
Noon	Lunch
1:00 PM	Biological Hazards and Controls
2:00 PM	Chemical Hazards and Controls
2:20 PM	Physical Hazards and Controls
3:00 PM	FPD Group Exercise - Presentations
5:00 PM	Adjourn

Day 2

9:00 AM	Initial Tasks in Developing a HACCP Plan
9:30 AM	Breakout Session #1
2:45 PM	Hazard Analysis and CCP's
11:00 AM	Breakout Session #2

Noon	Lunch
1:00 PM	Critical Limits
2:00 PM	Monitoring
	Corrective Actions
3:00 PM	Breakout Session #3
5:00 PM	Adjourn

Day 3

9:00 AM	Verification and Validation
10:00 AM	Record Keeping
10:30 AM	Breakout Session #4
Noon	Lunch
1:00 PM	Organizing and Managing HACCP
1:30 PM	HACCP and Regulatory Issues
2:00 PM	HACCP Case Study
3:00 PM	Q&A Session
3:30 PM	HACCP Quiz
4:00 PM	Adjourn

Day 4

Constitution Day-No Classes

Day 5

Constitution Day-No Classes

Food Defense 101 can be done online at: <https://www.accessdata.fda.gov/scripts/FDTraining/>

Week 5: Cereal Quality, Food Mycology and Mycotoxins

July 2-6, 2018

Day 1

9:00 AM	Food Defense Case Study
9:40 AM	Food Defense Quiz
10:00 AM	Technological Potential of Grain
11:00 AM	Grain: Quality, Storage and Safety
Noon	Lunch
1:00 PM	The Concept of Quality at the Mill. Assortment of Flour

2:00 PM	Flour: Quality, Storage and Safety
3:00 PM	Lab: Examination of flour quality
5:00 PM	Adjourn

Day 2

9:00 AM	Types of Bread
9:30 AM	Common Steps of Bread Making
10:30 AM	Understanding of Bread faults. Diseases of Bread
11:00 AM	Q&A session and Cereal Quality Quiz
Noon	Lunch
1:00 PM	Introduction to Food Mycology and Ecology of Fungi in Foods
1:45 PM	<i>Aspergillus, Penicillium, and other Mold Species</i>
2:45 PM	Break
3:00 PM	Labs: Microscopic Examination of Selected <i>Aspergillus, Penicillium, Cladosporium, Alternaria, Byssoschlamys, and Fusarium</i> species. Air Sampling
4:30 PM	Adjourn

**Week 5: Cereal Quality, Food Mycology and Mycotoxins
July 2-6, 2018**

Day 3

9:00 AM	Introduction to Airborne Fungi Typical Numbers, Prevention and Control
9:45 AM	Introduction to Yeast
10:15 AM	Detection and Enumeration of Yeasts
10:45 AM	Heat Resistant and Xerophilic Molds
Noon	Lunch
1:00 PM	Food Spoilage Yeasts and Preservative Resistant Yeasts
2:00 PM	Lab Session Continued: Microscopic Examination of Selected <i>Aspergillus, Penicillium, Cladosporium, Alternaria, Byssoschlamys, and Fusarium</i> species

	Air Sampling Microscopic Examination of Selected Yeast Species
4:00 PM	Adjourn

Day 4

9:00 AM	Molecular Methods for Fungi Detection
10:00 AM	Analysis of Mycotoxins: Aflatoxin, Ochratoxins and Fusarium Toxins
11:00 AM	Patulin in Apple Juice and Other Apple Products
Noon	Lunch
1:00 PM	Prevention and Control of Mold Growth in Foods- Antifungal Agents
1:30 PM	Labs: Microscopic Examination of Selected Yeast Species Continue Microscopic Examination of Mold Species. Mycotoxin Analysis using Test Kits. Examine Results of Air Sampling. Finish Examination of Mold Cultures
4:00 PM	Food Mycology Case Study
5:00 PM	Adjourn

Day 5

9:00 AM	Tour Food Processing Facility-Bakery
Noon	Lunch
3:00 PM	Food Mycology Quiz, Post-Test Assessments
5:00 PM	Graduation and Adjourn